CONTENTS OF VOL. 74 Nos 1–6

NUMBER 1—JULY

Debye–Waller factor in Cu: a Green's function approach
By R. C SHUKLA and E. STERNIN 1

Green's function and atomic mean-square displacement: phonon shift and width contributions
By R. C. SHUKLA 13

***In-situ* observation of the domain configurations during the phase transitions in barium titanate**
By M. L. MULVIHILL, K. UCHINO, Z. LI and W. CAO 25

Capacitance anomaly near the metal–non-metal transition in Cr–hydrogenated amorphous Si–V thin-film devices
By J. HU, J. HAJTO, A. J. SNELL, A. E. OWEN and M. J. ROSE 37

Growth of spiral carbon tubes by a mixed-valent oxide-catalytic carbonization process
By Z L. WANG and Z. C. KANG 51

Frequency-resolved photoconductivity studies in amorphous As_2Se_3
By R. KAPLAN 71

Determination of the charge mobility in organic photoconductors by a new method—theoretical study and experimental results
By N. MARC, J. Y. MOISAN, N. WOLFFER, B. ANDRE and R. LEVER 81

Effect of doping molecules and plasticizer addition on carrier mobility in PVK photoconductors
By N. MARC, J. Y. MOISAN, B. ANDRE and R. LEVER 93

NUMBER 2—AUGUST

Localization effects in ac-driven tight-binding lattices
By M. HOLTHAUS and D. W. HONE 105

Non-adiabatic small-polaron hopping conduction in $SrTiO_3$–doped $90V_2O_5$–$10Bi_2O_3$ glassy semiconductors
By M. SADHUKHAN, S. CHAKRABORTY, D. K. MODAK and B. K. CHAUDHURI 139

Compositional and structural analysis of hydrogenated amorphous silicon–nitrogen alloys prepared by plasma-enhanced chemical vapour deposition
By F. DEMICHELIS, F. GIORGIS and C. F. PIRRI 155

Atom-specific thermal vibration amplitudes in stoichiometric NiAl: agreement of neutron diffraction and *ab initio*-based molecular dynamics
By J. MEI, B. R. COOPER, A. C. LAWSON, J. A. ROBERTS and J. D. COTTON 169

Voronoi tessellation of packings of spheres: topological correlation and statistics
By L. OGER, A. GERVOIS, J. P. TROADEC and N. RIVIER 177

Predominant influences on the bulk properties and surface morphology in hydrogenated amorphous silicon carbide films
By Y. ISHIZUKA, T. YAMAGUCHI, Y. IIDA, H. NOZAKI and A. FURUKAWA 199

Neutron spin echo determination of spin dynamics in the quasiferromagnetic regime of a Au–15at.% Fe alloy
By B. V. B. SARKISSIAN 211

NUMBER 3—SEPTEMBER

Interface properties of Si_3N_4/Si/n-GaAs metal–insulator–semiconductor structure using a Si interlayer
By D.-G. PARK, Z. CHEN, A. E. BOTCHKAREV, S. N. MOHAMMAD and H. MORKOÇ 219

Hopping conduction in unconventional lead cuprate glass
By S. HAZRA and A. GHOSH 235

Effect of hydrostatic pressure on the thermoelastic transformation of Ni–Ti alloy and the entropy of transformation
By G. P. JOHARI, J. G. MCANANAMA and G. SARTOR 243

Spontaneous magnetic ordering in $CeRh_3B_2$ observed by zero-field muon-spin relaxation
By D. W. COOKE, B. L. BENNETT, A. C. LAWSON, J. G. HUBER, J. OOSTENS, C. BOEKEMA, J. A. FLINT and R. L. LICHTI 259

Raman scattering from hydrogenated amorphous silicon obtained by homogeneous chemical vapour deposition
By L. VASSILEV and A. TONEVA 269

Magnetism in UCu_2Ge_2: the role of intrinsic domain wall pinning
By T. V. CHANDRASEKHAR RAO, P. RAJ, SK. M. YUSUF, L. M. RAO, A. SATHYAMOOKTHY and V. C. SAHNI 275

Improvement in the electrical properties of a (Ba, Sr)TiO_3 capacitor by inserting a TiN layer between polycrystalline Si and Pt bottom electrodes
By Y. T. KIM and C. W. LEE 293

Low-frequency 'demon-like' excitations in small metal particles and their interaction with light
By V. V. KRESIN and V. Z. KRESIN 301

Carrier-induced mechanism for defect formation in hydrogenated amorphous silicon
By D. REDFIELD and R. H. BUBE 309

Effect of the addition of the impurity Mn on the electronic properties of the amorphous semiconductor $(Se_{70}Te_{30})_{99.9}Mn_{0.1}$
By R. S. KUNDU, K. L. BHATIA, N. KISHORE and V. K. JAIN 317

NUMBER 4—OCTOBER

In-plane photoconductivity in amorphous silicon doping multilayers
By J. P. CONDE, M. SILVA, V. CHU, H. GLESKOVA, K. VASANTH, S. WAGNER, D. S. SHEN, P. POPOVIC, S. GREBNER and R. SCHWARZ 331

Ultrasonic study of the elastic and nonlinear acoustic properties of the paramagnetic Cr–5 at.% V single-crystal alloy
By M. CANKURTARAN, G. A. SAUNDERS, Q. WANG and H. L. ALBERTS 349

New visible luminescence spectra from synthetic type IIa diamond
By T. FUJITA, M. I. ABD-ELRAHMAN, K. TAKIYAMA and T. ODA 359

Structure and luminescence properties of an amorphous hydrogenated carbon
By S. R. P. SILVA, J. ROBERTSON, RUSLI, G. A. J. AMARATUNGA and J. SCHWAN 369

A new technique to calculate the electronic structure of two-dimensional quasicrystals
By A. K. YILDIZ and J. L. BEEBY 387

A comparison of the hydrogenated amorphous Si Schottky barrier and the hydrogenated amorphous Si p–i–n dark forward-bias current density–voltage characteristics
By F. A. RUBINELLI, H. LIU and C. R. WRONSKI 407

NUMBER 5—NOVEMBER

Special Issue: David Pines—Forty-five Years of Many-Body Theory

Forty-five years of many-body theory
By K. S. BEDELL 427

Reminiscences
By M. GELL-MANN 431

Forty-five years of many-body theory: what is the relation of field theory and representations of Lie algebras?
By R. SLANSKY 435

Interplay between the Kondo effect and the Ruderman–Kittel–Kasuga–Yosida interaction in the two-impurity model
By L. P. GOR'KOV and J. H. KIM 447

Low-energy excitations in an incipient antiferromagnet
By D. W. Hess, J. J. Deisz and J. W. Serene 457

Spin pseudo-gap and $z = 1$ pseudo-scaling in cuprate superconductors
By V. Barzykin 469

Two-dimensional Fermi liquids at low densities: the single-particle self-energy
By J. Kim and D. Coffey 477

Ground-state properties of the two-chain Hubbard ladder
By R. M. Noack, D. J. Scalapino and S. R. White 485

Model of *c*-axis transport of high-T_c cuprates
By Y. Zha 497

Josephson experiments on the high-temperature superconductors
By A. J. Leggett 509

Local microstructure and the cuprate spin gap puzzle
By P. C. Hammel and D. J. Scalapino 523

Magnetotransport in nearly antiferromagnetic Fermi liquids
By B. P. Stojković 529

Nuclear magnetic resonance and electron spins: some history, ancient and in the making
By C. P. Slichter, R. L. Corey, N. J. Curro, S. M. DeSoto, K. O'Hara, T. Imai, A. M. Kini, H. H. Wang, U. Geiser, J. M. Williams, K. Yoshimura, M. Katoh and K. Kosuge 545

Fermi surface evolution in underdoped cuprates
By A. V. Chubukov, D. K. Morr and K. A. Shakhnovich 563

Oxygen nuclear magnetic resonance on the 90 K plateau of $YBa_2Cu_3O_{7-\delta}$
By J. A. Martindale and P. C. Hammel 573

Proteins: a challenging many-body problem
By H. Frauenfelder 579

Phenomenological theory of two-dimensional quantum liquids
By M. Gulácsi 587

Local antiferromagnetic correlations and $d_{x^2-y^2}$ pairing
By D. J. Scalapino and S. A. Trugman 607

Origin and consequences of the 'gap' in the cuprate normal state
By K. F. Quader and G. A. Levin 611

Local Fermi liquids: where have all the instabilities gone?
By K. S. Bedell and J. Engelbrecht 633

High-field, low-temperature magnetoresistance of single crystalline heavy fermion $YbNi_2B_2C$
By A. LACERDA, A. YATSKAR, G. M. SCHMIEDESHOFF, W. P. BEYERMANN and P. C. CANFIELD 641

Bose glass vortex phase transition in twinned $YBa_2Cu_3O_{7-\delta}$ superconductors
By H. SAFAR, S. R. FOLTYN, Q. X. JIA and M. P. MALEY 647

Supercritical behaviour of the mixed state of Nb–Ti in high magnetic fields
By G. M. SCHMIEDESHOFF and J. L. SMITH 655

NUMBER 6—DECEMBER

Obituary—Professor Sir Nevill Mott
By E. A. DAVIS 663

Glass transformation, heat capacity and structure of As_xSe_{1-x} glasses studied by modulated temperature differential scanning calorimetry experiments
By T. WAGNER and S. O. KASAP 667

Ni and Zn doping of Cu sites in superconducting $Nd_{2-z}Ce_zCuO_4$, $La_{2-\beta}Sr_\beta CuO_4$, $Bi_2Sr_2CaCu_2O_8$, $Bi_{1\cdot8}Pb_{0\cdot2}Sr_2Ca_2Cu_3O_{10}$, $YBa_2Cu_3O_7$, $La_{0\cdot6}Ca_{0\cdot4}Ba_{1\cdot35}La_{0\cdot65}Cu_3O_x$ and $YBa_2Cu_4O_8$
By H. A. BLACKSTEAD and J. D. DOW 681

Path-integral approach in the calculation of the electron density of states at the semiconductor–insulator interface
By G. SLAVCHEVA and I. YANCHEV 715

Statistical multiple diffuse scattering in a distorted crystal system: an exact theory
By Z. L. WANG 733

Surface morphology and optical properties of MeV-energy heavy-ion irradiated crystalline Si and crystalline Ge: possibility of formation of porous material
By K. L. BHATIA, P. SINGH, N. KISHORE, D. KANJILAL and N. C. MEHRA 751

Subject index 777

Index of Authors (with the titles of papers) 781